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Parental Perceptions of Body Mass Index and Obesity in School Age Children

A Senior Honors Thesis Presented in Partial Fulfillment of the Requirements for the Degree of

Bachelor of Science in Nursing with Distinction

College of Nursing of The Ohio State University

By

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* * * * *

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Approved by

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Introduction

The number of children who are considered overweight or obese has risen substantially, and today more than 9 million children over 6 years old are considered obese. In the past three decades, the rate of obesity has tripled in children age 6 to 11 years (Institute of Medicine, 2004). Obese children have a higher risk for developing serious chronic conditions such as hypertension, Type 2 diabetes mellitus, obstructive sleep apnea, and hyperlipidemia. Previously, these conditions were rarely found in children. Overweight and obesity have a tremendous financial impact on the United States. In 1999 approximately $127 million was spent on childhood obesity related hospital costs. This is projected to reach $100 billion by 2025 with the current rates of obesity (National Center for Chronic, 2005; Wolf & Colditz, 1998; Wolf, 1998). Parents have an impact on their child's weight through diet, enforcement of exercise and/or activity, and routine screenings at the pediatrician's office. Therefore, parents may need further guidance about their active role in helping their child maintain a healthy weight (Harrell, Pearce, & Hayman, 2003).

The role of the school and the school nurse in addressing the obesity epidemic lacks clarity. Body Mass Index or BMI is a cost effective method for health professionals such as school nurses to screen individuals for weight status. BMI is calculated by dividing weight in kilograms (kg) by meters squared (m^2). A child with a BMI for age greater than the 95^{th} percentile or 30 kg/m^2 is considered obese. Between the 85^{th} and 95^{th} percentiles or greater than 25 kg/m^2, the child is overweight, and less than the 5^{th} percentile or 18.5 kg/m^2 is considered underweight (Centers for Disease Control and Prevention (CDC), 2004). The accuracy of BMI percentiles in children as recommended by the CDC has been substantiated. Zimmerman, Gubeli, Puntener, and Molinari (2004) compared skinfold thickness measures from four separate sites in 6 to 12 year old children (*n*=2,431). The recommended values from the International Obesity Task Force (IOTF) were studied as well. The CDC reference values were

found to be superior in sensitivity and specificity for detecting obesity in relation to body fat percentages. The IOTF values did not detect half of the children that were classified as obese based on body fat percentage. Understanding parents' perceptions of the role of the school in collecting BMI information could enhance the development of school or pediatrician policies on this topic. The purpose of this research was to gain an understanding of parental perceptions of the schools' role in addressing childhood obesity. The specific research questions were what are: (a) parental perceptions regarding the causes of obesity and the use of BMI as a screening tool for obesity; (b) preference for method of receipt of BMI information; and (c) parental perceptions of the school's role in the prevention and treatment of childhood obesity?

Review of Literature

Perceptions of childhood obesity

Myers and Vargas (2000) surveyed 200 parents in Arlington, Virginia regarding their perceptions and beliefs about childhood obesity, and their own child's obesity. The health program staff's perception of obesity was studied as well. Parents of children between 2 and 5 years old and above the 95th percentile for height and weight were included. Despite this inclusion criteria, 35.5% (*n*=71) of the parents did not perceive their child as obese and 43% (*n*=129) of the parents thought their child's weight was fine or that there was no cause for concern. Nursing staff perceptions about each child's weight was also collected based on the staff members' observational opinion of the child when fully dressed; 18.7% of the children were not considered to look obese by the staff. Parents were asked what problems an overweight child might experience, and 78% identified some type of heart problem later in life. To control weight, 48% of parents tried decreasing the number of high fat and high sugar snacks, and 5% reported increasing their child's physical activity.

In a similar study, Baughcum, Chamberlin, Deeks, Powers, and Whitaker (2000) evaluated mothers' perceptions of overweight children (*n*=622). Ninety-five percent of the obese mothers (n=292) identified themselves as obese (BMI greater than 30 kg/m^2). However, 79% of

the mothers with overweight children did not recognize that their child was overweight. This is more than twice the proportion of mothers who failed to identify their child as obese in Myers and Vargas' study. Mothers with less education were less likely to identify their child as overweight.

Hardus, van Vuuren, Crawford, and Worsley (2003) evaluated Australian public perceptions of childhood obesity causes and preventative measures. For two days, individuals at a shopping mall were randomly asked to complete the questionnaire on potential causes of childhood obesity as well as prevention methods (*n*=315). Participants responded that increased fast food or unhealthy food consumption was the leading cause of childhood obesity. Promotion of healthier eating while watching television and while at school as well as increasing physical activity programs in the schools were the most common suggestions for prevention methods. Overall, the authors concluded that the public generally acknowledges numerous contributing factors to childhood obesity and identifies several areas where prevention strategies may be successful.

Preferences for receiving child's BMI information

No current research has identified parental preferences for receiving child's BMI information. In 2003, Arkansas legislature created the "Arkansas School BMI Assessment Project". This project requires that school nurses collect yearly height and weights for students in grades kindergarten through twelfth and provide this information in a health report card for parents. This report card also includes the health effects of BMI, nutrition and physical activity.

The Ohio Department of Health provides school personnel with guidelines for BMI collection as well as a sample letter that can be sent home to parents to inform them of their child's BMI. This letter encourages parents to follow up with the child's regular physician to gather more information. The letter prepares the parent for questions the health care provider may have such as family history or growth patterns since birth. It also suggests that the health care provider is an excellent resource for guidelines on nutrition and physical activity for the

child. Finally, the letter requests that parents not start their child on a diet until they see their provider. It provides a place for the personnel to include contact information so the parent may call for additional resources. Although this letter as well as the Arkansas health report card are comprehensive, their usefulness and effectiveness have not been evaluated (Ohio Department of Health, 2003).

Parental perceptions of the school's role

Few studies have examined parental perceptions of the school's role in the prevention and treatment of childhood obesity. Several studies have focused on school nurses' perceptions of childhood obesity. Price, Desmond, Rupport, and Stelzer (1987) assessed school nurses' perceptions of obesity in school age children (*n*=250). Seventy one percent of respondents found it difficult to council parents and children on weight loss. Sixty five percent reported schools need to do more to combat childhood obesity. Additionally, 75% of respondents thought that eliminating junk food and providing healthier and lower calorie meals would be helpful. One quarter of school nurse respondents felt that they had enough knowledge to recommend weight loss programs. Overall, this study concluded that school nurses feel the school should take a more active role in addressing obesity (Price et al., 1987).

Moyers, Bugle, and Jackson (2005) revised the questionnaire used by Price et al. and assessed school nurses' (*n*=106) perceptions of obesity in school age children. Poor eating behavior (94.3%), excessive caloric consumption (94.3%), and sedentary lifestyle (95.3%) were selected as playing a major role in childhood obesity. Approximately 71% of school nurses did not believe that schools were doing enough to address childhood obesity. Suggested interventions included health curriculum with emphasis on nutrition and weight, eliminating all junk food, providing healthier meals, and integrating physical education courses specifically for obese children. When asked what measures they used for screening for obesity, school nurses ranked clinical impression as their first choice; BMI-for-age percentile was ranked fourth. As with

the Price et al. (1987) study, they suggested that schools need to be more involved with treating and preventing childhood obesity.

Price, Desmond, Rupport, and Sauder (1992) evaluated parents' perceptions of childhood obesity and the school's role (*n*=375). While 87% of the parents reported that maintaining a normal weight is important to health, only 28% noted that schools were not doing enough to address this problem. In fact, more parents did not support the idea of schools intervening (38% versus 18%). Many parents supported physical education classes and health curriculum that incorporated nutrition and weight control. Parents' perceptions did not vary depending on whether the parent or child was obese. Current data are lacking concerning parents' perceptions of the school's role and preferences for the receipt of BMI information. This study addressed this issue.

Theoretical Framework

Exploration of the relationship between parental perceptions of BMI and obesity in school age children, and the school's role in preventing and treating childhood obesity was guided by the Health Promotion Model (Pender, Murdaugh, & Parsons, 2002). In 1982, Pender created the model to explain the various aspects that interact and affect health related behaviors. Two important components of the model focus on the benefits and barriers of action that can affect a health related behavior. As applied in this study, the Health Promotion Model addressed these concepts in the following manner:

1. Perceived barriers (e.g. believing the school should not have a role) can inhibit the initiation of action in reducing a child's weight.
2. Perceived benefits can lead to better school policy on the collection and distribution of BMI information to parents.

Parents can have a significant impact on their child's weight status, and examining parental perceptions of BMI and obesity as well as the participation of the schools in these areas could lead to distribution of BMI information in a manner which parents support.

Methods

Sample

The target population for this study was parents of at least one child between the ages of 5 and 12 years old. This encompassed parents with children in grades Kindergarten through 6th. A convenience sampling method of parents with children in an after school program affiliated with an Ohio suburban school system and who were able to read and write English was used. The program provides care for children at 11 schools, about 600-650 children total. Care is provided to children from the time school ends until 5:45 PM. Of the 506 surveys distributed throughout these 11 sites, 117 surveys (23%) were returned.

Procedure

Following approval from the after school program and The Ohio State University Institutional Review Board, the questionnaire along with the letter explaining the purpose of the study was placed in every child's mail folder in the program. Parents chose to complete the questionnaire onsite or to take the questionnaire home to complete, and return at a later date. The questionnaires were returned to a sealed box with a slot that was placed near the mail folders. Parents were asked to return the questionnaire within one week. A reminder letter was distributed two weeks after the initial letter and survey are distributed. Surveys were collected biweekly. A brief summary of the findings was distributed to the sites at the completion of the study.

Instrument

Research questions were addressed using a revised existing survey. The original survey was used in 1987 to evaluate school nurses' perceptions of obesity in school age children (Price et al., 1987). This survey had an internal reliability of 0.80 (Cronbach's alpha). In 2005, Moyers, Bugle, and Jackson updated the survey in a comparison study to the 1987 group of school nurses (Cronbach's alpha, r=0.74). With permission from Price and Moyers, the survey was

revised for the current study to assess parental perceptions of obesity in school age children (r=0.66).

The newly adapted instrument "Parental Perceptions of Body Mass Index and Obesity in School Age Children" is comprised of 44 questions. First, parents were asked about their familiarity with BMI and the appropriateness of its use in schools with a yes/no question, and two Likert scale responses. Participants then indicated whether they strongly agreed, agreed, are neutral, disagreed or strongly disagreed with general conclusions about obesity (5 questions). Next, parents indicated whether certain factors play a major role or minor role in causing obesity (10 questions). Then, they answered 11 questions regarding the school's role in preventing and treating childhood obesity (five point scale from strongly agree to strongly disagree). They also checked their preference for receiving BMI information from the schools from a list of seven options and an open ended choice. Basic demographic information was collected about the parent and child (14 questions). The instrument was reviewed for content validity by two faculty experts at two different universities who were not part of the research study. The instrument was then given to two parents who were not affiliated with the program to determine feasibility and readability. Minor revisions were made. The instrument took approximately five minutes to complete.

Analysis

Data were entered into a SPSS-PC database and initially analyzed descriptively. BMIs were calculated using an Internet BMI calculator (NHLBI, 2006). A child or parent with a BMI for age greater than the 95th percentile or 30 kg/m^2 was considered obese. Between the 85th and 95th percentiles or greater than 25 kg/m^2, the individual was considered overweight, and less than the 5th percentile or 18.5 kg/m^2 was underweight (CDC, 2004). For example, if a parent or child had a BMI of 17 kg/m^2, they would be assigned to the underweight category. If their BMI was 20 kg/m^2, they would fall into the normal weight section. Finally, if their BMI was, for

example, 27 kg/m^2, they would be in the overweight category, and if their BMI was 32 kg/m^2, they would be considered obese.

Results

Respondents

Parents completing the survey generally were female, white, less than 40 years old, had two school age children, and were college graduates with a BMI between 17.8 kg/m^2 and 24.9 kg/m^2. Parent's had a mean BMI of 24.7 kg/m^2 (median 23.6 kg/m^2). The typical child the parent described was between 7 and 8 years old, white, male, and had a BMI between 12.6 kg/m^2 and 17.8 kg/m^2. Child's BMI had a mean of 17.1 kg/m^2 (median 16.45 kg/m^2) (Tables 1 and 2).

Parental perceptions of the causes of obesity and the efficacy of BMI

In this study, 93.9% of parents were familiar with BMI. In addition, 61.7% found BMI to be very or somewhat useful in providing information about their child's weight. Nearly 80% strongly agreed or agreed that BMI is appropriate for schools to use in weight screening. Parents were asked to respond to five items regarding the seriousness of childhood obesity. Respondents noted that normal weight is important to the health of children, childhood obesity is becoming more common, and most obese children will not outgrow their obesity (Table 3). To determine parental perceptions of the causes of childhood obesity, parents decided whether 10 items had a major or minor role in obesity development. The majority of parents reported that inactivity, poor eating behavior, lack of parental control in what children eat, and eating too much were the main causes of childhood obesity and played a major role in its development. Other items such as hormone problems and peer pressure did not show as much agreement among respondents (Table 4).

Parental preference for the receipt of BMI information

Parents were asked to select how they would like to receive their child's BMI information from the school. They were given seven options including "other" and the choice that the school should not have a role in collecting BMI information. Generally, parents selected that they would

like to receive a letter from the school nurse (67.5%) regarding their child's BMI. Approximately 21.4% of parents felt that schools should not address the issue of overweight or obesity. Other choices that were favored by some included school referral to pediatrician (16.2%), face to face conference (13.7%), telephone call from school nurse (12.0%), included with report card (7.7%), and physical education teacher (6.0%). Parents were also given the option of selecting “other” and then explaining the method they felt appropriate. However, generally parents who selected this option did not provide an alternative method. Rather, they elaborated on their selection of the listed choices. Parents selected an average of 1.23 choices (SD=1.06) for receipt of BMI information with a letter from the school nurse and face to face conference (nurse to parent) as the most common combination (*n*=16).

Parental perceptions of the school's role

Parents were generally indifferent about whether or not the school was doing enough to alleviate childhood obesity (Table 5). However, most parents felt that units on nutrition and weight control should be available in every school. Parents strongly felt that physical education classes should be present, and they generally supported eliminating junk food machines and offering special low calorie meals. Topics such as on-site weight control programs and counseling for the parents of obese children divided the parents fairly evenly in their opinions of agreeing, remaining neutral, or disagreeing. Almost one-third stated the school should recommend treatment for weight loss for all obese children. More parents felt that recommending treatment for weight loss only for children (or parents of children) who ask for help was more appropriate (Table 5).

Discussion

This study explored parental perceptions and beliefs related to childhood obesity, its causes, and appropriateness of BMI as a screening tool. It also investigated parents’ perceptions of what role the school should have and the preferred method for BMI information distribution. Childhood obesity is a growing concern of parents as they recognize that it is

becoming more common in society and that normal weight is important to the health of children. In 2005, the United States Preventive Services Task Force (USPSTF) determined there was inconclusive evidence to recommend for or against obesity screening in children and adolescents (USPSTF, 2005). The IOFT (2005) supports coordinated efforts and interventions among health care providers, schools, and families regarding childhood obesity screening. These divergent views could contribute to the confusion associated with obesity screening and distribution of data. The role of the schools and the significance of parental views in the development of policies also remain unclear.

According to the parents in this study, the leading causes of childhood obesity are inactivity such as video games, television, and computer time, poor eating behavior, and lack of parental control in what children eat. These results are supported by Myers et al. (2000) who found that 47% of the parents surveyed experienced some difficulty in controlling their child's food intake. Hardus et al. (2003) also found respondents identified that promotion of healthier eating and increasing physical activity in the schools were key prevention methods.

Parents were fairly neutral regarding whether or not schools are doing enough to alleviate childhood obesity, possibly indicating that in a suburban school system, this is not a large barrier to addressing childhood obesity. In contrast, Moyers and colleagues (2003) found that Missouri school nurses reported that schools were not doing enough to alleviate childhood obesity. Price, Desmond, Rupport, and Sauder (1992) found that only 28% of parents in two Midwestern cities thought the school was not doing enough to alleviate childhood obesity. This study found that 36.2% of parents felt the schools were not doing enough. This may reflect increased parental awareness and concern regarding childhood obesity over the past 14 years. Respondents in this study strongly supported units on nutrition and weight control, and most agreed that schools should eliminate "junk food" machines. Moyer et al. (2003) and Price et al. (1992) also found that both school nurses and parents related to removing "junk food" machines and including units on nutrition and weight control.

This study also addressed parental preferences for the receipt of BMI information. Price et al. (1992) found that 38% of parents were against the school intervening with this issue. In contrast, this study showed that less than one-quarter of parents stated that schools should not address overweight or obesity. The majority of parents preferred to receive their child's BMI information in a letter from the school nurse. As noted, the Ohio Department of Health (2003) provides schools with guidelines for BMI as well as a sample letter to send to parents. The implementation and efficacy of these letters has not yet been evaluated.

Limitations of the study

This descriptive study of convenience sampling has several limitations. Self- report bias is a concern as parents reported height and weight for themselves and their child. In future studies, these data should be directly collected. Because the survey was distributed in the mail folders of after school programs, the researchers did not have direct contact with the participants which could have contributed to the low response rate. Other reasons for a low response rate could include a lack of an incentive for participation and distribution of only one reminder letter. This study was limited to parents of school age suburban children, a mainly white, middle class area (US Census Bureau, 2000). Therefore, the perceptions of parents in this study may not represent perceptions of a more diverse sample, and those from rural and urban areas.

Implications for school nursing practice

Parents reported they wanted to know their child's BMI, and the majority would like to receive the information in a letter from the school nurse. School nurses planning to implement sending letters home to parents regarding their child's weight should do so after coordinated planning with school administrators. A protocol should be developed and approved by the appropriate school administration and the Board of Education. The protocol should include a standardized letter informing parents of their child's BMI. The protocol should initially be piloted to assess response and ease this transition. Prior to implementation, appropriate counseling

and referral systems need to be in place for both the parent and the child. Outcomes in terms of impact on the child's weight and parental follow thru should be determined. If possible, collaboration with primary care providers should take place in order to ensure consistent messages are being delivered to the parent and child.

In this study, parents supported school interventions such as offering special low calorie meals and eliminating "junk food" machines. School nurses are in a position to work with school administrators and policy makers to address these concerns. School as well as public health nurses should advocate for physical education classes, health curriculum on nutrition and weight control, eliminating "junk food" machines, and offering special low calorie meals. Bauer, Yang, and Austin (2004) identified barriers to utilizing physical education classes, open gym time, and consuming low calorie or healthier meals. The feeling of competitiveness with peers was the main barrier for open gym time and physical education classes. Students did not want to be teased or feel embarrassed. Also, students reported that the quality of cafeteria food was poor and there often was not time to wait in the cafeteria line, thus making vending machine snacks more appealing. Faculty and staff identified that vending machines provided a source of income for scholarship and field trip funds. Using a multilevel comparison of 5,200 fifth grade students, parents, and school principles, Veugelers and Fitzgerald (2005) found that those schools which participated in a program that supported guidelines for healthy eating had significantly lower rates of overweight and obesity based on BMI. They also had healthier diets and more physical activity than students from schools which did not have these nutrition programs. As Bauer et al. (2004) identified, barriers exist to the interventions which parents from this study supported. These barriers need careful consideration in each school setting in order to successfully implement health programs. Furthermore, if nutrition and weight programs can be initiated and maintained in schools, positive outcomes are possible as supported by Veugelers et al. (2005).

School nurses are in a prime position to determine parental preferences and beliefs in their school district. This information will enable school nurses to understand perceived barriers and benefits to implementing and utilizing resources within the school to combat obesity. This understanding can allow for the development of appropriate health screening programs for parents and children of their school district, possibly leading to healthier lifestyles and a reduction in childhood obesity.

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Appendix A

Introductory Letter

Date

Dear Parent or Guardian:

My name is Maureen Murphy, and I am currently a Senior Honors Nursing student at The Ohio State University College of Nursing working with Dr. Barbara Polivka, Associate Professor. As an Honors student, I am working on a research thesis. Because obesity has become an increasing problem in children, we are interested in studying parental perceptions of Body Mass Index and obesity in school age children. Specifically, the purpose of this study is to evaluate parental perceptions of the causes of obesity and the use of Body Mass Index as a screening tool for obesity, determine parental preferences for the receipt of Body Mass Index information, and assess parental perceptions of the school's role in the prevention and treatment of childhood obesity.

We are asking that you complete the attached questionnaire within the next week. It should take about 5-10 minutes to complete. If you choose to participate in this study, you may either complete the survey now or take it home with you and return it at your earliest convenience to the sealed and labeled box. Your responses to the survey are anonymous, as we are not collecting information that could link your survey specifically to you. Your child's position in the Care After School program is not influenced by your decision to participate or not participate in this study. You may choose not to participate or you may choose not to answer questions in the survey. By returning the survey, you are indicating your informed consent to participate in this study. A brief summary of the study results will be made available at CAS upon completion of the study (Spring, 2006).

The Institutional Review Board at The Ohio State University as well as the Care After School Program have approved this research. This research will help lay the foundation for future research to focus on ways to help address childhood obesity. If you have any questions or concerns, please contact Dr. Polivka at 614-292-4902 or Polivka.1@osu.edu. Thank you for your time.
Sincerely,

Barbara Polivka, PhD, RN
Associate Professor

Maureen Murphy
Senior Honors Nursing Student

Appendix B

Reminder Letter

Date

Dear Parent or Guardian:

About one week ago you received a survey to evaluate parental perceptions of the causes of obesity and the use of Body Mass Index as a screening tool for obesity, determine parental preferences for the receipt of Body Mass Index information, and assess parental perceptions of the school's role in the prevention and treatment of childhood obesity. If you have had an opportunity to complete the survey, we would like to thank you for returning your questionnaire and for participating in our study.

If you have not had an opportunity to complete your survey, we urge you to please do so within the next week and return it to the labeled collection box at the Care After School Program. If you need another questionnaire, there are extras provided next to the collection box. It should take about 5-10 minutes to complete the survey. If you choose to participate in this study, you may either complete the survey now or take it home with you and return it at your earliest convenience to the sealed and labeled box. Your responses to the survey are anonymous, as we are not collecting information that could link your survey specifically to you. Your child's position in the Care After School program is not influenced by your decision to participate or not participate in this study. You may choose not to participate or you may choose not to answer questions in the survey. By returning the survey, you are indicating your informed consent to participate in this study.

A brief summary of the study results will be made available at CAS upon completion of the study (Spring, 2006).

If you have any questions or concerns, please contact Dr. Polivka at 614-292-4902 or Polivka.1@osu.edu. Thank you for your time and participation. Your efforts are greatly appreciated.

Sincerely,

Dr. Barbara Polivka, PhD, RN
Associate Professor

Maureen Murphy
Senior Honors Nursing Student

Appendix C

Care After School Program Support Letter

Date

Dr. Polivka:

The Care After School (CAS) Program grants permission and supports Maureen Murphy, Ohio State Honors Nursing Student, and Dr. Barbara Polivka, Ohio State Nursing Associate Professor, to conduct an anonymous survey regarding parental perceptions of Body Mass Index and obesity in school age children at our programs beginning in September 2005. The study is entitled “Parental Perceptions of Body Mass Index and Obesity in School Age Children”.

We understand that the surveys will be placed in each students’ mail slot in the Worthington Care After School programs, that parents will choose to respond/not respond, that a reminder letter will be placed in each students’ mail slot about 2 weeks after the initial survey is distributed, that parents will be asked to return their survey to a collection box placed at our sites for which Maureen and Dr. Polivka will be responsible. Survey completion will take approximately 15 minutes. Parents can also complete a separate information card if they would like a summary of results. Extra surveys will also be available at CAS sites for those that have misplaced their original survey. Final collection of surveys will be completed about 1 month after the initial distribution date.

We are pleased to be a part of this study.

Sincerely,

Table 1

Sample Characteristics for Parents with Child in Care After School (n=117)

Characteristic	n (%)
Age	
Adult </= 40 years	59 (51.3)
>40 years	56 (48.7)
Race	
White	101 (87.8)
Black	4 (3.5)
Asian	7 (6.1)
Other/mixed	3 (2.6)
Gender	
Male	12 (10.4)
Female	103 (89.6)
Educational Level	
Not a college graduate	37 (31.9)
College graduate	79 (68.1)
Body Mass Index	
17.8-25.0	71 (63.4)
25.1-29.9	27 (24.1
30.0-54.8	14 (12.5)

Table 2

Sample Characteristics for Children within Care After School (n=117)

Characteristic	n (%)
Age	
5-6 years old	25 (22.7)
7-8 years old	45 (40.9)
9-10 years old	29 (26.4)
11-12 years old	11 (10.0)
Race	
White	97 (84.3)
Black	5 (4.3)
Asian	6 (5.2)
Other/mixed	7 (6.1)
Gender	
Male	65 (56.5)
Female	50 (43.5)
Grade	
Pre-K and Kindergarten	12 (10.4)
First grade	25 (21.7)
Second grade	16 (13.9)
Third grade	25 (21.7)
Fourth grade	15 (13.0)
Fifth grade	13 (11.3)
Sixth grade	9 (7.8)
Body Mass Index	
12.6-18.0	67 (71.3)

18.1-24.9	24 (25.5)
25.1-28.0	3 (3.2)

Table 3

Parents' Perceptions of Childhood Obesity

	Strongly Agree/Agree n (%)	Neutral n (%)	Disagree/Strongly Disagree n (%)
1. Normal weight is important to health of children.	110 (94.8)	5 (4.3)	1 (0.9)
2. Childhood obesity is becoming more common.	114 (98.3)	1 (0.9)	1 (0.9)
3. Most obese children will outgrow their obesity.	11 (9.6)	21 (18.4)	82 (71.9)
4. Reducing childhood obesity is easier than reducing obesity in adulthood.	82 (70.7)	24 (20.7)	10 (8.6)
5. Childhood obesity is a significant cause of peer rejection.	80 (70.5)	27 (23.5)	7 (6.0)

Table 4

Parents' Perceptions of the Causes of Childhood Obesity

	Major Role n (%)	Minor Role n (%)
1. Poor eating behavior	112 (96.6)	4 (3.4)
2. Eating too much	94 (81.0)	22 (19.0)
3. Inactivity (video games/TV/computer time)	114 (98.3)	2 (1.7)
4. Heredity/genetics/family traits	71 (61.7)	44 (38.3)
5. Cultural factors	46 (40.4)	68 (59.6)
6. "Junk food machines"	56 (48.3)	60 (51.7)
7. Lack of parental control in what children eat	100 (86.2)	16 (13.8)
8. Lack of money to buy nutritious foods	34 (29.6)	81 (70.4)
9. Peer pressure	27 (23.3)	89 (76.7)
10. Hormone problems	38 (33.3)	76 (66.7)

Table 5

Parents' Perceptions of the School's Role in the Prevention and Treatment of Childhood Obesity

	Strongly Agree/Agree n (%)	Neutral n (%)	Disagree/Strongly Disagree n (%)
1. Not doing enough to alleviate childhood obesity	42 (36.2)	48 (41.4)	26 (22.4)
2. Units on nutrition and weight control should be available in every school	96 (82.8)	16 (13.8)	4 (3.4)
3. Eliminate "junk food" machines	87 (75.0)	18 (15.5)	11 (9.5)
4. Special low calorie meals	53 (47.7)	30 (27.0)	28 (25.2)
5. On-site weight control treatment programs	43 (37.4)	35 (30.4)	37 (32.2)
6. Physical education classes	115 (99.1)	1 (0.9)	
7. Counsel the parents of obese children	36 (31.0)	36 (31.0)	44 (37.9)
8. Recommend treatment for weight loss for all children	37 (31.6)	35 (29.9)	45 (38.5)

who are obese			
9. Recommend treatment for weight loss only for children (or parents of children) who ask for help	70 (59.8)	22 (18.8)	25 (21.4)
10. Recommend treatment for weight loss only for children with a health problem affected by their obesity	25 (21.4)	39 (33.3)	53 (45.3)
11. Should not recommend treatment for weight loss	33 (28.4)	39 (33.6)	44 (37.9)